

above primer and adapter primer (AP-1 primer: 5'-

CCATCCTAATACGACTCACTATAGGGC-3' (SEQ ID NO. 6), Fig. 1) as primers.

The above adapter cDNA contains the regions to which the adapter primers AP-1 and AP-2 hybridize. The PCR was performed in a manner such that the system was exposed to treatment at 94°C for 1 min; five cycles of treatment at 94°C for 30 sec and at 72° C for 4 min; five cycles of treatment at 94°C for 30 sec and at 70°C for 4 min; then 25 cycles of treatment at 94°C for 20 sec and at 68°C for 4 min. (TaKaRa Ex Taq (Takara Shuzo) and the attached buffer were used as Taq polymerase instead of Advantage KlenTaq Polymerase Mix.) As a result, 1.5kb fragments were amplified at the 5' region and 0.9kb fragments at the 3' region. These fragments were cloned with the pCR-Direct Cloning System (Clontech), CR-TRAP Cloning System (GenHunter), and PT7Blue-T vector (Novagen). When the 5'-RACE fragment was cloned into the pCR-Direct vector, the fragment was amplified again using 5'-

CTGGTTCGGCCCAGAACTTGAACGCTGAATCA-3'(SEQ ID NO. 7) and 5'-

CTCGCTCGCCCCTAATACGACTCACTATAGG-3'(SEQ ID NO. 8) as primers.